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August 3, 1982

Technical Report

Approved for Public Release

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Prepared for:

OFFICE OF NAVAL RESEARCH
800 North Quincy Street
Arlington, Virginia 22217

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Abstract

Positive and negative life events and social support were correlated with illness among Navy Submarine School students. Negative, but not positive, life events in the recent past were related to reports of illness. While social support by itself was not related to illness reports, the relationship between negative life events and illness was stronger among subjects with low rather than high levels of social support. Subjects who reported low availability of social support but satisfaction with the available support and who also had high negative life events scores were particularly likely to report illness. The results suggest the importance of assessing both stressful life events and moderators of response to stress, such as social support, in investigating the role played by personality in illness.

Life Events, Social Support and Illness

One of the most intriguing and potentially important developments in the study of psychological factors in health and illness is the growing evidence that personality make-up, the way people live, and social conditions contribute to health or illness, a sense of physical well-being, and longevity (Antonovsky, 1979; Kobasa, Maddi & Kahn, 1982). As a consequence, the complex of factors that must be considered in health-related research has increased significantly. Physicians and researchers have, for a long time, noticed an association between very severe stressors (wars, concentration camps, natural disasters) and illness. Even so, the association is far from perfect. Some people deteriorate rapidly under severe stress, while others show minimal to moderate deterioration, and still others seem unaffected.

Recently, researchers have inquired into the relationship of less cataclysmic events (marriage, divorce, loss of job) to illness. (Sarason, Sarason, & Johnson, in press). As the research has progressed, evidence has been uncovered that buttresses the idea that life changes are frequently related to decreased levels of physical health and emotional well-being. At the same time, a number of personality and social variables have been identified that may moderate or render less stressful some major life changes.

Observations in a variety of settings have highlighted the positive roles played by social attachments in psychological adjustment and health. Physicians daily note the salutary effects of their attention and expressed concern on patients' well-being and recovery from illness. Soldiers develop strong, mutually reinforcing ties with each other that contribute to their success and survival. Psychotherapists try to provide their clients with the acceptance needed to pursue self-examination. Bowlby's (1980) theory of attachment has stimulated research into the supportive role of social relationships for both adults and children. There are theoretical and empirical reasons for believing that social support contributes to positive adjustment and personal development and also provides a buffer against the effects of stress. After reviewing the literature, Cohen and McKay (Note 1) recently concluded that, while lacunae exist in current knowledge, there is increasing evidence consistent with the hypothesis that social support can function as a stress buffer.

Reasonable as an emphasis on the importance of social support seems to be, the task of empirically demonstrating its effects has barely begun. One of the barriers to objective research has been the lack of a reliable, general, and convenient index of social support. Some researchers have simply gathered information about subjects' confidants and acquaintances; others have focused their attention on the availability of helpful others in coping with certain work, family, and financial problems; and still others have devised questionnaires and other techniques to assess social support. These devices range from simple paper and pencil scales (Luborsky et al., 1973) to detailed interview schedules (Henderson, 1980).

The diversity of measures of social support is matched by the diversity of conceptualizations concerning its ingredients. However, regardless of how it is conceptualized, social support would seem to have two basic elements:

(1) number of available others to whom one can turn in times of need, and (2) degree of satisfaction with the available support. Sarason, Levine, Basham, and Sarason (in press) have recently constructed an instrument, the Social Support Questionnaire, that reliably assesses these dimensions of social support. In this article we report the results of a study using this instrument in which the focus was the relationships of both assessed life changes and social support to indices of illness.

Method

Subjects

The subjects were 163 men enrolled in the Basic Enlisted Submarine School, Groton, Connecticut. They ranged in age from 18 to 27 years (mean age = 19).

Materials

The index of life changes was the Life Experiences Survey (LES). (Sarason, Johnson & Siegel, 1978). The LES is a self-report measure that asks subjects to (1) indicate events they have experienced during the past year and (2) rate the desirability and impact of these events. Summing the impact ratings of events designated as positive by the subject provides a positive change score. A negative change score is derived by summing the impact ratings of those events experienced as negative. The negative, but not the positive, change score has been shown to correlate significantly with measures of anxiety, depression, and general psychological discomfort (Sarason, Sarason, & Johnson, in press); the occurrence of myocardial infarctions (Pancheri et al., 1980); seriousness of illness (Michaels & Deffenbacher, Note 3); and menstrual discomfort (Siegel, Johnson & Sarason, 1979).

The index of social support was the 27-item Social Support Questionnaire (SSQ) whose items include, "Whom can you count on to console you when you are

very upset?" and "Whom could you really count on to help you out in a crisis situation, even though they would have to go out of their way to do so?") (Sarason, Levine, Basham, Sarason, in press). The SSQ items require two-part answers. The subjects are asked to (1) list the people to whom they could turn and on whom they could rely in given sets of circumstances (Availability), and (2) rate how satisfied they are with the available support (Satisfaction). Studies with the SSQ showed it to have desirable psychometric features and to correlate with reports of positive life change on the LES (Sarason, Levine, Basham, Sarason, in press). Subjects low in social support tend to have an external locus of control and relatively low self-esteem.

A 67-item self-report Health Questionnaire was administered to all subjects who were asked to check symptoms that occurred in the past year (e.g. ringing in ears, nosebleeds, nausea, rashes) and to indicate whether each symptom was a chronic or isolated event. An isolated event was defined as one that occurred no more than twice in the past year. A chronic event was defined as one that occurred more than twice in the past year. The three scores derived from the Health Questionnaire were the number of chronic and isolated symptoms and the total number of symptoms.

In addition to the self-report illness data, the total number of illnesses in the past 12 months was tabulated using the subjects' naval medical records. Illnesses referred to in medical records during the School program were also tabulated.

Procedure

The LES, SSQ, and Health Questionnaire were administered at the beginning of the 5 1/2 week school. The subjects were tested in groups ranging in size from 15 to 25 men. The 163 subjects were divided into two groups. Those in Group A (N=90) completed the LES and Health Questionnaire without regard to any distinction between the two 6-month periods of the year

on which they were reporting. Group B (N=73) completed the LES by recording separately events that occurred either during the past 6 months or during the preceding 6-month period (i.e. 7-12 months ago). This group completed the Health Questionnaire by indicating the particular month(s) in which the reported illnesses occurred. These responses were then dichotomized into illnesses during the preceding 6 months and between 7 and 12 months ago.

Results

Table 1 presents the correlations between LES scores, self-reported illnesses, and illnesses recorded in the subjects' medical files (Group A, N=90). LES-N and LES-P refer to the number of events the subjects checked as being negative or positive (i.e. "bad" or "good" events). Two additional LES measures were available because subjects also rated the positive and negative events of the past year in terms of how much the events affected their lives. These ratings, on a four-point scale from "no effect" to "great effect", were used as weights applied to positive and negative events (LES-NW and LES-PW).

The three self-report illness indices in Table 1 are the subjects' isolated illnesses (which occurred only once or twice in the preceding year), their chronic illnesses (which occurred more than twice in the preceding year), and the total number of illnesses. Five illnesses accounted for 39.8% of all self-reported illness. The first four of these, accounting for 35%, were upper respiratory conditions (cough and congestion, Eustachian tube dysfunction, sore throat, and ear infections). The fifth most frequent condition consisted of ankle and knee pains. Other conditions that were reported included backaches, headaches, and skin disorders. Correlations for the number of illnesses recorded in the medical records (recorded illnesses) are also included in Table 1.

As Table 1 shows, there were no significant relationships between the two positive events indices and the illness measures. The LES-N and LES-NW indices correlated significantly with the three self-report illness measures, but not with illnesses recorded in medical files. For both negative and positive events, the weighted indices showed higher correlations than simple counts of positive and negative events. The correlation between self-reported illnesses and illnesses recorded in medical files was .37, ($p < .01$). The size of this correlation, as well as the other correlations involving medical files data, was limited by the relatively small number of times the subjects went on sick call. Because they are a basically healthy group, most of their illnesses were minor and did not require professional attention.

Group B ($N=73$) responded to the LES and the Health Questionnaire separately for the two 6-month periods of the preceding year. None of the correlations for positive events was statistically significant for either period. Table 2 presents the correlations for the two periods for the weighted negative events score LES-NW. In every case, the weighted correlation was larger than the comparable unweighted one. In Table 2, LES-NW1 refers to the first 6-month period and LES-NW2 refers to the second (most recent) 6-month period. The table shows that weighted negative events for the first 6-month period are significantly correlated with self-reported illness for both time periods, while weighted negative events for the second period are uncorrelated with any of these illness measures. The medical records data yielded a significant correlation ($r=.56$, $p < .001$) only between weighted events during the first 6 months and illnesses in the second 6 month period. The correlation between LES-NW1 and LES-NW2 was not significant ($r=.08$), as was the correlation between illness mentioned in medical records during the two time periods ($r=.15$).

The Social Support Questionnaire (SSQ) itself was not correlated significantly with illness measures. However, it might serve as a moderator of life events-illness relationships. This possibility was evaluated by dividing the combined Groups A and B at the SSQ median. The correlations between LES scores and illnesses recorded in medical files were similar for high and low SSQ groups. However, there were some significant differences when self-reported illnesses were used as dependent measures. Table 3 presents correlations between LES-N and LES-NW and self-reported illness measures for the 1-year period for subjects approximately above and below the availability median (SSQN: Number of persons listed on the SSQ as available supports). The table shows that there were significant LES-illness correlations for both the SSQN groups. The LES-N and LES-NW correlations with Chronic Illnesses were significantly higher for the low SSQN group than for the high SSQN group. The z^2 tests equalled 4.99 ($p < .01$) and 3.54 ($p < .05$), respectively. Table 4 presents the LES-N and LES-NW correlations for groups differing in levels of satisfaction with their available social supports (SSQS: Satisfaction with available supports). The LES-N and LES-NW correlations with Isolated Illnesses were significantly different for high and low SSQS groups $z^2 = 3.63$ and 5.49 , $p < .05$ and $p < .01$, respectively.

An additional set of analyses was performed in which subjects received scores reflecting their level of satisfaction with available social support when the actual level of support appeared to be low. Such scores might reflect a tendency to deny the fact that one has an inadequate availability of social support. To assess this tendency, each subject's Satisfaction score was summed for those SSQ items for which no supportive others were listed. This score was tentatively labeled as Denial (SSQD), because it seemed to reflect level of satisfaction in the face of low availability of support.

It seemed of particular interest because of reported indications of denial in some types of psychosomatic disorders.

Table 5 presents correlations of LES-N and LES-NW with self-reported illness for groups above and below the SSQD median. In every instance, the LES-illness correlations were significantly greater for the high than for the low Denial group (using z^2 test, $p < .05$, in each case, except for the LES-NW X Total Illnesses correlation, for which $p < .01$).

Table 6 presents means and standard deviations for measures used in comparisons which we have reported.

Discussion

Two types of illness data were used in this study, self-reports and information obtained from medical files. Self-reports of illness (usually in the form of questionnaires and health diaries) have been found to possess adequate reliability, convenience, and significant relationships with information provided by physicians (Brook et al., 1979). However, there is some evidence that illness self-reports overestimate acute and recently noticed conditions and that they are susceptible to the effects of psychological distress (Tessler & Mechanic, 1978; Verbrugge, 1980). A huge percentage of the illnesses reported by our subjects were of the acute variety, particularly upper respiratory conditions. This is not surprising, given that the subjects were young, active, and healthy. The significant findings of the research are particularly impressive because young military personnel are as low as they are in vulnerability to illness. The restricted range of illnesses described in the subjects' medical files limited the power of this type of data. With more vulnerable subjects, the results might well have been even stronger than they were.

Our findings showed that negative, but not positive, life changes are associated with illness reports. This is consistent with previous evidence

that the LES-negative score is related to both illness reports and medically diagnosed illness (Coppel, Note 2; Michaels & Deffenbacher, Note 3; Pancheri, et al., 1980; Siegel, Johnson & Sarason, 1979). Particularly intriguing was the finding that while negative events that occurred 7-12 months ago were not correlated with medically diagnosed illness during that period of time, they were very significantly related to illness in the succeeding time period. This finding is consistent with growing evidence of time lags between adverse experiences and various types of clinical manifestations (Surtees, Kiff & Rennie, 1981.) A line of research that appears to be particularly fruitful is the exploration of life events - illness relationships for particular types of conditions. A bunching up of adverse experiences may increase vulnerability in varying degrees for different illnesses. The at risk period following negative life events may be quite different for upper respiratory infections, cancer, and coronary heart disease. Thus, the temporal variable may play an important role in life events - illness relationships. In view of recent evidence that the life events - illness relationships is influenced by sex and age, it would be desirable to incorporate these and other demographic variables into research designs (Murphy & Brown, 1980).

There is growing evidence that a variety of variables function as moderators of the effects of adverse events and experiences. (Johnson & Sarason, 1979). Social support may be one of the most important of these. Berkman and Syme (1979) have provided impressive evidence that particular patterns of social interaction and levels of social support have distinctive correlations with longevity and that social disconnectedness and higher mortality are significantly associated. Other researchers have found links between social variables, illness, and birth complications (Andrews, Tennant, Hewson, & Schonell, 1978; Cooley & Keesey, 1981; Nuckolls, Cassel & Kaplan,

1972.)

Our findings revealed sizeable differences in life events - illness correlations between groups differing in social support. The differences were particularly large for groups differing in level of satisfaction with the available support and are consistent with the idea that supportive others play a protective or ameliorating role in illness. Much anecdotal and clinical evidence is also consistent with this hypothesis. However, while the hypothesis is appealing, a variety of types of research are needed to clarify the nature of stress - social support - illness relationships. In addition to assessment and clinical studies, there is a need for controlled interventive experiments dealing with the effects of social support. (Sarason, 1981). One type of experimental investigation is illustrated by Whitcher & Fisher's (1979) study in which the subjects were hospitalized surgical patients and the treatment was social support. Whitcher and Fisher defined social support simply as nurses touching patients according to a prescribed schedule. The manipulation added significantly to both the physiological and medical progress of the patients. There is a particular need for preventive interventions in which illness and psychological adjustment are examined as a function of opportunities for enhanced social support.

The fact that satisfaction with social support yielded stronger results than simply number of supports suggests the importance of how availability is processed by the individual. Sarason et. al. (in press) found that the introversion-extroversion dimension influences this social information processing. The results for denial point to another information-processing factor. For the purposes of this study, denial was defined as reported satisfaction with what would seem to be meager availability of social support. Defined in this way, what is being denied or, perhaps not recognized, are unmet needs for social contact. Our analyses showed that

life events-illness correlations were in every comparison stronger for high than low denial groups. While further research is needed to map the denial construct as we have defined it, it seems possible that high denial depletes the individual's stress-coping resources and consequently increases susceptibility to illness. If this interpretation is correct, social support might be viewed as a buffer against stress and the denial of its relative unavailability might be regarded as a vulnerability factor.

Growing evidence that both stressful life events and social support play important roles in the development of psychological and physical maladaptations, leads inevitably to interest in the process by which stress is transduced into symptoms. A starting point in analyzing this process is the experiences of life that involve environmental lacks, demands, and constraints. There are well-documented physiological effects associated with the need to deal with threats and feelings of distress. Anxiety, anger, and depression are common physiological reactions to personal challenges that, when persistent, can exert significantly bodily influences. More knowledge is needed concerning the similarities and differences among coping styles that involve or result in symptoms. Kobasa, Maddi, and Kahn's (1982) research on the relationships between hardiness and health and Antonovsky's (1979) concepts of resistance resources and sense of coherence suggest some of the conceptual paths that might prove fruitful.

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Table 1
Correlations between Weighted and Unweighted Negative and
Positive Life Events (LES), Self-Reported Illnesses,
and Illnesses Recorded in Medical Files (N=90)

	<u>LES-N</u>	<u>LES-NW</u>	<u>LES-P</u>	<u>LES-PW</u>
Isolated Illnesses	.28**	.37**	.02	.10
Chronic Illnesses	.25*	.27**	.04	.11
Total Illnesses	.35**	.43**	.03	.13
Recorded Illnesses	.09	.14	.12	.18

* $p < .05$

** $p < .01$

Table 2
Correlations between Weighted Negative Life Events (LES),
Self-Reported Illnesses, and Illnesses Recorded in Medical Files
(1 refers to first 6-month period of preceding year;
2 refers to second 6-month period) (N=73)

	<u>LES-NW1</u>	<u>LES-NW2</u>
Isolated Illnesses 1	.41**	.05
Isolated Illnesses 2	.25*	.14
Chronic Illnesses 1	.20*	.08
Chronic Illnesses 2	.18	.01
Total Illnesses 1	.39**	.08
Total Illnesses 2	.31**	.11
Recorded Illnesses 1	-.04	-.03
Recorded Illnesses 2	.56**	-.03

* $p < .05$

** $p < .01$

Table 3

Correlation between Unweighted and Weighted Negative Life Events
(LES-N and LES-NW) and Self-Reported Illnesses (1-year period)
For High and Low SSQN (Availability) Groups

	Above SSQN Median	Below SSQN Median
LES-N x Isolated Illnesses	.30**	.26*
LES-N x Chronic Illnesses	.15	.47**
LES-N x Total Illnesses	.32**	.41**
LES-NW x Isolated Illnesses	.39**	.36**
LES-NW x Chronic Illnesses	.18	.44**
LES-NW x Total Illnesses	.41**	.48**

* $p < .05$

** $p < .01$

Table 4

Correlations between Unweighted and Weighted Negative Life Events
(LES-N and LES-NW) and Self-Reported Illnesses (1-year period)
for High and Low SSQS (Satisfaction)

	<u>Above SSQS Median</u>	<u>Below SSQS Median</u>
LES-N x Isolated Illnesses	.15	.41**
LES-N x Chronic Illnesses	.18	.36**
LES-N x Total Illnesses	.28*	.40**
LES-NW x Isolated Illnesses	.21	.50**
LES-NW x Chronic Illnesses	.21	.37**
LES-NW x Total Illnesses	.33*	.50**

* $p < .05$

** $p < .01$

Table 5

Correlation between Unweighted and Weighted Negative Life Events
(LES-N and LES-NW) and Self-Reported Illnesses (1-year period)
for High and Low Levels of Denial (SSQD)

The z^2 's refer to differences between high and low denial groups.

	<u>High Denial</u>	<u>Low Denial</u>	<u>z^2</u>
LES-N x Isolated Illnesses	.43**	.18	3.15
LES-N x Chronic Illnesses	.40**	.15	3.10
LES-N x Total Illnesses	.51**	.22	3.50
LES-NW x Isolated Illnesses	.52**	.29*	4.30
LES-NW x Chronic Illnesses	.41**	.16	3.15
LES-NW x Total Illnesses	.60**	.29*	6.50

* $p < .05$

** $p < .01$

Table 6
Means and Standard Deviations for Measures Used in Correlations
(N=163)

	<u>Mean</u>	<u>Standard Deviation</u>
LES-N	3.30	2.96
LES-NW	5.50	6.38
LES-P	4.28	3.14
LES-PW	7.56	6.68
SSQN	76.94	46.97
SSQS	143.94	18.96
SSQD	8.09	16.42
Isolated Illnesses	2.41	3.27
Chronic Illnesses	.93	2.01
Total Illnesses	3.34	4.08
Recorded Illnesses	1.58	1.63

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Pasadena, CA 91106

Psychologist
ONR Branch Office
1030 E. Green Street
Pasadena, CA 91106

Commanding Officer
ONR Branch Office
536 S. Clark Street
Chicago, IL 60605

Psychologist
ONR Branch Office
536 S. Clark Street
Chicago, IL 60605

Commanding Officer
ONR Branch Office
Bldg. 114, Section D
666 Summer Street
Boston, MA 02210

Psychologist
ONR Branch Office
Bldg. 114, Section D
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Office of Naval Research
Director, Technology Programs
Code 200
800 N. Quincy Street
Arlington, VA 22217

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LIST 3
OPNAV

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Scientific Advisor to DCNO (Op-01T)
2705 Arlington Annex
Washington, DC 20350

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Director, Human Resource Management
Division (Op-15)
Department of the Navy
Washington, DC 20350

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Head, Research, Development, and
Studies Branch (Op-102)
1812 Arlington Annex
Washington, DC 20350

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Director, Human Resource Management
Plans and Policy Branch (Op-150)
Department of the Navy
Washington, DC 20350

Chief of Naval Operations
Head, Manpower, Personnel, Training
and Reserves Team (Op-964D)
The Pentagon, 4A578
~~Washington, DC 20350~~

Chief of Naval Operations
Assistant, Personnel Logistics
Planning (Op-987P10)
The Pentagon, 5D772
Washington, DC 20350

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LIST 4
NAVMAT & NPRDC

NAVMAT

Program Administrator for Manpower,
Personnel, and Training
HQ Naval Material Command (Code 08D22)
678 Crystal Plaza #5
Washington, DC 20370

Naval Material Command
Management Training Center
NMAT 09M32
Jefferson Plaza, Bldg #2, Rm 150
1421 Jefferson Davis Highway
Arlington, VA 20360

NPRDC

Commanding Officer
Naval Personnel R&D Center
San Diego, CA 92152

(5 Copies)

Navy Personnel R&D Center
Washington Liaison Office
Building 200, 2N
Washington Navy Yard
Washington, DC 20374

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LIST 5
BUMED

Commanding Officer
Naval Health Research Center
San Diego, CA

Commanding Officer
Naval Submarine Medical
Research Laboratory
Naval Submarine Base
New London, Box 900
Groton, CT 06340

Director, Medical Service Corps
Bureau of Medicine and Surgery
Code 23
Department of the Navy
Washington, DC 20372

Naval Aerospace Medical
Research Lab
Naval Air Station
Pensacola, FL 32508

CDR Robert Kennedy
Officer in Charge
Naval Aerospace Medical
Research Laboratory Detachment
Box 2940, Michoud Station
New Orleans, LA 70129

National Naval Medical Center
Psychology Department
Bethesda, MD 20014

Commanding Officer
Navy Medical R&D Command
Bethesda, MD 20014

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LIST 6
NAVAL POSTGRADUATE SCHOOL

Naval Postgraduate School
ATTN: Dr. Richard S. Elster
Department of Administrative Sciences
Monterey, CA 93940

Naval Postgraduate School
ATTN: Professor John Senger
Operations Research and
Administrative Science
Monterey, CA 93940

Superintendent
Naval Postgraduate School
Code 1424
Monterey, CA 93940

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Sequential by State/City/FPO

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LIST 7
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Officer in Charge
Human Resource Management Detachment
Naval Air Station
Alameda, CA 94591

Officer in Charge
Human Resource Management Detachment
Naval Submarine Base New London
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Groton, CT 06340

Officer in Charge
Human Resource Management Division
Naval Air Station
Mayport, FL 32228

Commanding Officer
Human Resource Management Center
Pearl Harbor, HI 96860

Commander in Chief
Human Resource Management Division
U.S. Pacific Fleet
Pearl Harbor, HI 96860

Officer in Charge
Human Resource Management Detachment
Naval Base
Charleston, SC 29408

Commanding Officer
~~Human Resource Management School~~
Naval Air Station Memphis
Millington, TN 38054

Human Resource Management School
Naval Air Station Memphis (96)
Millington, TN 38054

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List 7 (Continued)

Commanding Officer
Human Resource Management Center
1300 Wilson Boulevard
Arlington, VA 22209

Commanding Officer
Human Resource Management Center
5621-23 Tidewater Drive
Norfolk, VA 23511

Commander in Chief
Human Resource Management Division
U.S. Atlantic Fleet
Norfolk, VA 23511

Officer in Charge
Human Resource Management Detachment
Naval Air Station Ehibey Island
Oak Harbor, WA 98278

Commanding Officer
Human Resource Management Center
Box 23
FPO New York 09510

Commander in Chief
Human Resource Management Division
U.S. Naval Force Europe
FPO New York 09510

Officer in Charge
Human Resource Management Detachment
Box 60
FPO San Francisco 96651

Officer in Charge
Human Resource Management Detachment
COMNAVFORJAPAN
FPO Seattle 98762

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LIST 8
NAVY MISCELLANEOUS

Naval Military Personnel Command (2 copies)
HRM Department (NMPC-6)
Washington, DC 20350

Naval Training Analysis
and Evaluation Group
Orlando, FL 32813

Commanding Officer
Naval Training Equipment Center
Orlando, FL 32813

Chief of Naval Education
and Training (N-5)
ACOS Research and Program
Development
Naval Air Station
Pensacola, FL 32508

Naval War College
Management Department
Newport, RI 02940

LCDR Hardy L. Merritt
Naval Reserve Readiness Command
Region 7 Naval Base
Charleston, SC 29408

Chief of Naval Technical Training
ATTN: Dr. Norman Kerr, Code 0161
NAS Memphis (75)
Millington, TN 38054

Navy Recruiting Command
Head, Research and Analysis Branch
Code 434, Room 8001
801 North Randolph Street
Arlington, VA 22203

CAPT Richard L. Martin, U.S.N.
Prospective Commanding Officer
USS Carl Vinson (CVN-70)
Newsport News Shipbuilding &
Drydock Company
Newsport News, VA 23607

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LIST 9
USMC

Commandant of the Marine Corps
Headquarters, U.S. Marine Corps
Code MPI-20
Washington, DC 20380

Headquarters, U.S. Marine Corps
ATTN: Dr. A. L. Slafkosky,
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Washington, DC 20380

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LIST 11
OTHER FEDERAL GOVERNMENT

National Institute of Education
Educational Equity Grants Program
1200 19th Street, N.W.
Washington, DC 20208

National Institute of Education
ATTN: Dr. Fritz Muhlhauser
EOLC/SMD
1200 19th Street, N.W.
Washington, DC 20208

National Institute of Mental Health
Minority Group Mental Health Programs
Room 7 - 102
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Rockville, MD 20852

Office of Personnel Management
Organizational Psychology Branch
1900 E Street, NW.
Washington, DC 20415

Chief, Psychological Research Branch
ATTN: Mr. Richard Lanterman
U.S. Coast Guard (G-P-1/2/62)
Washington, DC 20590

Social and Developmental Psychology
Program
National Science Foundation
Washington, DC 20558

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LIST 12
ARMY

Army Research Institute
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P.O. Box 5787
Monterey, CA 93940

Deputy Chief of Staff for
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ATTN: DAPE-PBR
Washington, DC 20310

Headquarters, FORSCOM
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Ft. McPherson, GA 30330

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5001 Eisenhower Avenue
Alexandria, VA 22333

(2 copies)

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LIST 13
AIR FORCE

Air University Library/LSE 76-443
Maxwell AFB, AL 36112

DEPARTMENT OF THE AIR FORCE
Air War College/EDRL
Attn: Lt Col James D. Young
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LIST 15 (Continued)

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